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learning of the two groups showed no difference in rate of learning, and so afforded no evidence of learning of the route by semicircular canal factors.

As a control on this negative result, additional groups of rats were tested as to the extent to which established habits are disturbed by variation in conditions. Blind alleys were blocked off so that the animals learned the correct path only. Then the blind alleys were opened. The last half of the maze was learned and then the whole maze. The maze was rotated and disguised by proper linings. Although these variations in conditions in general disturbed the habits previously formed, the disturbances were not serious.

This result makes it seem likely that the negative result as to the semicircular canals was not due merely to the swamping of a habit already set up by a variation of conditions. Further experimentation is needed, however, to settle the point in question.

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REVIEWS AND ABSTRACTS OF LITERATURE

A Point Scale for Measuring Mental Ability. ROBERT M. YERKES, JAMES W. BRIDGES, and ROSE S. HARDWICK. Baltimore: Warwick and York, Inc. 1915. Pp. 218.

Professor Yerkes and his collaborators are engaged in a very important enterprise, the object of which is to prepare a more scientific instrument than we now have at hand for measuring general mental ability. The present volume contains an elaboration of two previous reports on the subject,[1] together with much new material, a complete revision of the original arrangement of the tests, and some very definite proposals for the further improvement of the Point Scale. Since the publication of this volume, still another report has been published,[2] giving later and more reliable "norms" and a more detailed discussion of the "coefficient of intelligence," which is described but briefly in the volume under consideration.

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[1] Robert M. Yerkes, and J. W. Bridges, "The Point Scale: A New Method for Measuring Mental Ability," *Boston Medical and Surgical Journal*, 1914, Vol. 171, pp. 857–865. Robert M. Yerkes and Helen M. Anderson, "The Importance of Social Status as Indicated by the Results of the Point Scale Method of Measuring Mental Capacity," *Journal of Educational Psychology*, 1915, Vol. VI., pp. 137–150.

[2] Robert M. Yerkes and Louise Wood, "Methods of Expressing Results of Measurements of Intelligence: Coefficient of Intelligence," *Journal of Educational Psychology*, 1916, Vol. VII., pp. 593–606.

The Point Scale is composed chiefly of tests which have "been tried out" for some years in the Binet-Simon series. The number of questions to be asked has been decreased, the form in which questions are to be asked and tasks are to be assigned has been modified in some respects, and the method of scoring the results has been radically changed in transplanting the Binet tests into the Point Scale.

The builders of the Point Scale have consciously given preference to those tests which are applicable through a considerable period of years, while Binet-test enthusiasts have usually looked with special favor on tests which make a sharp distinction between children of a given age and those younger. This difference is particularly emphasized in the two methods of scoring results. For the Binet tests a child's response to a given situation is credited either as a "success" or as a "failure," while the Point Scale recognizes degrees of success. For example, the child who is asked to make a sentence containing the words *New York, money,* and *river* is given no credit in the Binet test if he says: "I live near a river. There is money in New York." According to the Point Scale method, this response would receive 2 points, or half as much credit as would have been received if the three words had been used correctly in one sentence.

The result of a Binet test is a statement of the approximate mental age of the child, while the result of a Point-Scale test is a statement of the number of points credit allowed in the child's examination. The maximum total number of points allowable for making the correct response to each element of the twenty tests in the Point Scale is 100. By means of a table of "norms" it is easily possible, however, to transform such a Point-Scale score into terms of the average chronological age of normal American children who achieve the same number of points credit.

The authors of this report are to be commended for publishing in detail the exact score of each child on each test. We are tempted to say that the chief contribution made to the science of mental testing in this volume is to be found in the importance attached to the actual accomplishments of American children in the individual tests. Professor Yerkes and his assistants have not been satisfied to accept for American children the reported results of Binet and Simon in measuring the mental abilities of French children. Moreover, the authors of this volume have not been content to publish merely the total number of points achieved by each child in the test series as a whole. The achievement of each child in each test has been given in detail, with clear explanations of the bases used in allowing the various amounts of credit for each test. If such care had been taken by all those who have used these tests during the past few years, it would now be possible to interpret the results of applying them with much greater accuracy and confidence than is possible at present.

In his proposals for a Universal Point Scale for Mental Ability, Professor Yerkes proposes to give an equal number of tests for receptivity, imagination, affectivity, and thought. The difficulty here is the same that we find with all efforts to measure "general mental ability." Mental ability is so complex that none of us can be sure he has made a proper qualitative analysis of it, and certainly any attempt to weight definitely the various elements of mental ability can as yet be little more than a random guess. Even though we accept temporarily some ingenious weighting of the various functions such as that given in the Point Scale or in the Binet tests, the most practical points in connection with the results of our tests are not the "mental ages" or "Point-Scale scores," but the details showing just which types of tests were difficult for each individual tested. Even though two twelve-year-old boys are each of "mental age nine years" and each has a Point-Scale score of 50 points, it is nevertheless not improbable that the two are quite different in mental endowment and that the type of training needed by the one may be practically very different from that needed by the other. For purposes of practical vocational and educational guidance, a number of distinct and specific mental scales are needed instead of one scale for general ability.

It would be possible for us to contrive, no doubt, a scale for general physical health, and yet practically we are much more interested in the relations between the results of particular physical tests, such as weight, height, chest expansion, temperature of the blood, and the like. Similarly, the specific mental characteristics of an individual are the only satisfactory foundation for a practical mental diagnosis that is to be used as a basis for successful treatment. Although there may be a high correlation between intellectual qualities, we nevertheless find many special cases where measurements of general mental ability cover up the special defect or the special spark of genius that should determine the training to be provided.

A second vital difficulty in the Point Scale lies in the fact that the various tests have not been scaled at all. The tests are merely arranged in the order of difficulty resulting from the particular systems of partial credits determined upon by the authors. On the whole, the estimates used in giving the partial credits may have been so good as to disturb very little the general results, but it would seem unfortunate that a "coefficient of intelligence" should be based upon credits which were any less secure than the most careful investigation could make them. Let us hope that we may some day have a carefully graded series of tests in each of the special types of mental activity, each series so accurately evaluated that we may know just how much more difficult each element is than the previous element.

In spite of all the defects which appear in the Point Scale, it has many advantages over the mere translations of the Binet tests which have been used so extensively. The authors themselves point out constantly that their instrument is merely in the process of being developed and that there are many points in which it will be improved. The hopeful sign is the activity of the authors in carrying forward this improvement constantly on the basis of experimental results. No one can afford to omit this volume from his list if he wishes to read the important literature dealing with the measurement of intelligence.

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Outlines of Jainism. JAGMANDERLAL JAINI. Edited (with a preliminary note) by F. W. THOMAS. Cambridge: University Press. 1916. Pp. xl + 156.

The canonical books of Jainism have been later in coming to western attention than those of orthodox Brahmanism or of Buddhism. Judge Jagmanderlal's handbook is issued especially to pave the way for a series of translations which the Jain Literature Society has in view. It is less a sketch of the religion for light reading than a schematic framework with brief definitions of the many technical terms used in this philosophical system. After an introduction he devotes a few pages to Jain theology, so-called, and a much larger space to metaphysics, followed by ethics, a little on ritual, then quotations from texts, with appendices on logic, cosmogony, a list of the sacred writings, and some other subjects.

Jainism, or the sect of the Nirgranthas (Unfettered) is a legitimate child in the Hindu religious family, even if not so acknowledged by the orthodox, and its points of resemblance to the others are more apparent than its differences. Especially close is it to Buddhism in history, in practise, and in habits of thought. Mahāvīra, its great reformer, if not founder, was a contemporary of Gautama (*circa* 500 B.C.) and had been born at Vaisālī, a city which the latter much frequented. Yet it strikes the mind as cruder than Buddhism, more extravagant and lacking in the same warmth of human appeal. It contrasts in holding a dualistic philosophy, or perhaps pluralistic would be a better word, for the soul is classified as one of six substances. The others are matter, time, space, *dharma,* and *adharma. Dharma,* a term of many meanings, is in the present sense a peculiar notion of Jainism and denotes the medium that passively conditions motion, as water does for a fish. Contrariwise, *adharma* is the principle of rest, as the earth to falling bodies.

Jaina logic contains certain elements that may win approval from liberal thinkers. Its distinctive doctrine is one which broadly sug-